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APPLICATION NUMBER: *60/537,701*
FILING DATE: *January 20, 2004*
RELATED PCT APPLICATION NUMBER: *PCT/US05/01980*

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. ER 399446580 US

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Pat	Inglese	Smyma, Georgia

Additional inventors are being named on the _____ *separately numbered sheets attached hereto*

TITLE OF THE INVENTION (500 characters max)

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ENCLOSED APPLICATION PARTS *(check all that apply)*

☑ Specification *Number of Pages* 23 ☐ CD(s), Number _____

☐ Drawing(s) *Number of Sheets* _____ ☐ Other (specify) _____

☐ Application Data Sheet. See 37 CFR 1.76

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Respectfully submitted,

SIGNATURE Robert M. Jackson

TYPED or PRINTED NAME Robert M. Jackson

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Date January 20, 2004

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FEE TRANSMITTAL for FY 2004

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Effective 10/01/2003. Patent fees are subject to annual revision.

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 80

Complete if Known	
Application Number	
Filing Date	January 20, 2004
First Named Inventor	Pat Inglese
Examiner Name	
Art Unit	
Attorney Docket No.	

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	80

SUBTOTAL (1) ($) 80

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below		Fee Paid
Total Claims		-20** =		X	=	
Independent Claims		-3** =		X	=	
Multiple Dependent					=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

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FEE CALCULATION (continued)

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1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

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SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	Robert M. Jackson	*Registration No. (Attorney/Agent)*	46,796	*Telephone*	(205) 969-2800
Signature	Robt M. Jackson			*Date*	January 20, 2004

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CONCRETE PUMP PRIMER

[0001] This patent application is being filed as a provisional patent application under 37 C.F.R. § 1.53(c).

FIELD OF THE INVENTION

[0002] The present invention relates to the field of concrete pumping for commercial, highway, industrial and residential construction projects; and more particularly to the field of priming concrete pumps and lines. In greater particularity, the present invention relates to compositions for and methods of priming concrete pumps and lines.

BACKGROUND OF THE INVENTION

[0003] The placement of concrete into forms is a critical phase of most commercial, highway, industrial and residential construction projects. Typically, construction contractors are required to place concrete into forms as soon as possible after mixing, while the concrete is in a plastic and workable state. In many projects it is also required that concrete placement be continuous to allow for appropriate consolidation of adjoining layers to allow formation of uniform, dense, impervious concrete with smooth faces on exposed surfaces. The failure to properly place concrete in conformance with such exacting standards can result in structurally defective concrete that in many instances must be replaced at great cost to the construction contractor.

[0004] The use of concrete pumps for the placement of concrete into forms has gained widespread acceptance as a safe, efficient, and cost effective method of concrete placement. Concrete pumping allows for direct placement of concrete into forms without rehandling, resulting in significantly reduced labor costs and improved concrete quality. Generally, the use of concrete pumps is faster than traditional methods, because pumping allows for continuous placement of concrete. This can increase the productivity of finishers and decrease total construction time for the overall project, minimizing overhead costs and monetary penalties associated with construction delays.

[0005] Placement of concrete utilizing the pumping method involves the flow of concrete from a pump through a conduit, or pump line, such as flexible hoses or metal pipe. Concrete exits the pump line in a precisely controlled manner directly into forms. Pumping concrete offers a steady, predictable flow of concrete delivered to the point-of-use resulting in a smooth-flowing operation. A significant concern in concrete pumping operations is ensuring that the inner, concrete-contacting surfaces of the pump line are lubricated to facilitate the flow of concrete therethrough. This is not a problem after the flow of concrete has been established, because as it passes through a pump line the concrete acts as a self-lubricating agent by leaving a layer of slick cement slurry on the inner walls of the pump line. This is a problem, however, in initially establishing concrete flow in a pump line. Attempting to pump concrete through a dry pump line will cause the pump line to plug, resulting in costly construction delays. To address this problem, concrete pumpers have traditionally added water to the first batch of concrete to allow it to pump easier. This

conventional, "just wetting" technique is unacceptable because in most cases it does not prevent the pump line from plugging. Further, the introduction of excess water into the mixed concrete alters the target water-cement ratio of the concrete, causing decreased strength of the finished concrete and segregation of the components of the concrete. To address the problem, the American Concrete Pumping Association recommends always priming a concrete pump and line prior to initiating concrete pumping.

[0006] Priming a concrete pump line involves the application of a lubricating agent to the inner walls of the pump line to promote the establishment of concrete flow through the line. This is typically accomplished by pumping a priming fluid through the pump line immediately prior to initiating the pumping and flow of concrete through the pump line. The priming fluid is of a type that is easily pumped through a dry concrete pump line, and that will lubricate the inner, concrete-contacting surfaces of the pump line as it is pumped therethrough. In practice, the priming fluid once prepared is placed in fluid communication with the suction side of a concrete pump. In practice, the priming fluid is often placed in a vessel, referred to as a hopper, that is in fluid communication with the concrete pump. As the priming fluid is being pumped from the hopper, concrete is typically added to the hopper such that the final portion of the priming fluid is in contact with the initial portion of the concrete, with the priming fluid thereby preceding the concrete that is pumped through the concrete pump line. The priming fluid acts to lubricate the inner, concrete-contacting surfaces of the concrete pump line to facilitate the initial movement of concrete therethrough.

[0007] Various compositions for priming concrete pumps and pump lines are known in the prior art, however, all are disadvantageous when compared to the present invention. For instance, one method of priming concrete pumps utilizes ready-mixed priming grout. This priming grout slurry has the disadvantage of being expensive, requiring the use of a ready-mix truck. This method also has the disadvantage of utilizing large volumes of priming grout slurry that cannot be mixed with concrete, i.e., added to the form and mixed with concrete. This method therefore produces a large volume of priming grout slurry waste that requires offsite disposal. Another method of priming concrete pumps utilizes a concrete priming slurry, consisting of cement and water. Although the concrete priming slurry may be prepared without the use of a ready-mix truck, this concrete priming slurry method has the disadvantage of requiring the onsite delivery and handling of extra bags of cement. Additionally, similar to the priming grout slurry, the concrete priming slurry is a waste that requires offsite disposal.

[0008] The prior art also teaches the use of specialized lubricants as a priming fluid. For instance, United States Patent No. 5,997,633 to Montgomery teaches the use of a priming fluid comprising an additive mixed with water, the additive having a composition by weight of 80 to 90 percent alkaline material and 10 to 20 percent polymeric material. Such a priming fluid presents disadvantages, as the alkaline nature of the priming fluid, having a pH of between 11 and 12, presents safety concerns associated with the handling of the priming fluid. Further, the alkaline nature of the priming fluid presents the disadvantage of increasing the risk of producing weak or unstable set concrete as a result of alkali-silica reactivity and

alkali-aggregate reactivity. Other disadvantages with the use of alkaline priming fluid are associated with the cost of the alkaline materials and the relatively long duration of additive mixing and hydration. The use of the priming fluid prior to full hydration presents the risk of drawing water from concrete as it passes through a pump line, which interferes with the desired lubricating effect of the priming aid.

[0009] Accordingly, it is recognized in the construction industry that there is an increasing need for improved compositions for and methods of priming a concrete pump line to lubricate the pump line to promote the initial flow of concrete through the line. The present invention addresses the need for improved compositions for use in priming concrete pump lines in commercial, highway, industrial and residential construction projects

SUMMARY OF THE PRESENT INVENTION

[0010] It is the object of the present invention to provide an improved composition for use in priming concrete pump lines.

[0011] Another object of the present invention is to provide a solid particulate mixture that mixes quickly with water to produce an improved fluid composition for use in priming concrete pump lines.

[0012] An additional object of the present invention is to provide a solid particulate mixture that hydrates quickly upon mixing with water to minimize drawing water from concrete after the fluid composition has been used in priming concrete pump lines.

[0013] A still further object of the present invention is to provide a fluid composition that provides improved coating and lubrication to the inner walls of a concrete pump line as it passes therethrough during priming.

[0014] Another object of the present invention is to provide a non-alkaline fluid composition for use in priming concrete pump lines.

[0015] An additional object of the present invention is to provide a fluid composition for use in priming concrete pump lines that does not utilize cement or priming grout slurry.

[0016] These and other objects of the present invention are accomplished through an improved flowable composition for use in priming a concrete pump line. The flowable composition comprises a solid particulate mixture and water, the particulate mixture being comprised of solvatable polymeric material and crystalline silica sand. The present invention provides a specialized lubricant agent for use in concrete pump priming having a balanced pH, thereby overcoming the disadvantages of highly alkaline lubricants known in the art.

[0017] The flowable composition of the present invention comprises solvatable polymeric material in an amount in the range of from about 2 percent to about 50 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 50 percent to about 98 percent by weight of said mixture. Preferably, the polymeric material is in an amount in the range of from about 10 percent to about 20 percent by weight of said mixture and crystalline silica sand in an

amount in the range of from about 80 percent to about 90 percent by weight of said mixture. The quantity of water in the flowable composition is at least an amount in the range of about .01 to about 1.0 pounds of mixture per gallon of water, preferably in the range of about .05 to about .25 pounds of mixture per gallon of water.

[0018] The present invention overcomes the limitations of the prior art by providing a priming agent that mixes quickly to form a flowable priming composition that is easy to pump through dry concrete pump lines to lubricate the inner walls thereof. After mixing for only four to nine minutes, and optimally within five minutes, the flowable composition reaches and maintains its maximum lubricating potential. The short mix time exhibited by the present invention reduces delays associated with priming a concrete pump line, and allows the priming agent to be prepared shortly before use. Unlike specialized lubricating agents known in the prior art that utilize alkaline materials that must be dissolved in the mixing process prior to use, the mixing duration of the present invention is enhanced by the presence of crystalline silica sand, which is an inert material that acts as a dispersal agent for the polymeric material.

[0019] A further advantage of the present invention is that the particulate mixture hydrates more quickly upon being mixed with water than alkaline additives known in the prior art. Upon mixing the particulate mixture of the present invention with water, the composition reaches its proper lubricating viscosity and stabilizes to full hydration within a period of four to nine minutes, optimally less than five minutes. Unlike specialized lubricating agents known in the art, the composition does not continue to

thicken or hydrate after an optimal five-minute duration after mixing. As with the mix time, the short hydration time exhibited by the present invention reduces delays associated with priming a concrete pump line, and allows the priming agent to be prepared shortly before use. Also important, the short hydration time reduces the risk of using the priming fluid prior to full hydration, which increases the risk of inadequate lubrication of a concrete pump line. Instead of acting to lubricate a pump line, a priming fluid that has not been fully hydrated prior to use would have the opposite effect. A concrete pump primer that has not been fully hydrated would draw water from concrete as it passes through a pump line. This causes a drying effect on the concrete that separates the cement and aggregate components of the concrete and increases the risk of plugging the concrete pump line. Because the present invention hydrates more quickly than specialized lubricants known in the prior art, the present invention will not draw water from or otherwise dry out concrete. On account of the improved rheological properties of the present invention, it is suitable for use as a priming agent on longer pump lines and with more difficult concrete mixes.

[0020] Another advantage of the present invention is that, through the use of chemically-inert sand as a dispersing agent, the flowable composition is a priming agent that has a balanced pH. The use of the present invention, unlike priming agents known in the prior art, avoids problems associated with the use of highly alkaline priming agents. In comparison to those priming agents, the present invention is non-alkaline and therefore safer to handle. The present invention has the further advantages of preventing contact between a highly alkaline material and concrete or form structures, reducing the risks of damaging form structures such as

rebar; and of producing weak or unstable set concrete as a result of alkali-silica reactivity or alkali-aggregate reactivity.

[0021] These and other objects and advantages of the invention will become apparent from the following detailed description of the preferred embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0022] The present invention provides improved compositions and methods for priming a concrete pump line. The method of priming a concrete pump line comprises the steps of providing a solid particulate mixture comprised of solvatable polymeric material and crystalline sand; mixing the solid particulate mixture with a sufficient quantity of water to form a flowable composition; and pumping the flowable composition through a concrete pump line.

[0023] In the preferred embodiment of the method of priming a concrete pump line, the solid particulate mixture comprises solvatable polymeric material in an amount in the range of from about 2 percent to about 50 percent by weight of the mixture and crystalline silica sand in an amount in the range of from about 50 percent to about 98 percent by weight of the mixture. Preferably, the solid particulate mixture comprises solvatable polymeric material in an amount in the range of from about 10 percent to about 20 percent by weight of the mixture and crystalline silica sand in an amount in the range of from about 80 percent to about 90 percent by weight of the mixture.

[0024] The solvatable polymeric material includes a wide variety of polymers that either dissolve in water or at least form a colloidal dispersion in water. The solvatable, organic polymeric material as described herein may be a single polymer or copolymer or a mixture of such polymers and/or copolymers. Examples of polymers and copolymers useful in the present invention include polyethylene oxide, polypropylene oxide, polyacrylate, polymethacrylate, polyacrylamide, polymethacrylamide and copolymers thereof, maleic anhydride/methylvinyl ether copolymers, polyvinyl alcohol, polyvinylpyrrolidone, polyvinylacetate, copolymers of acrylamide and 2-acrylamido, 2-methylpropane sulfonic acid and copolymers of N,N-dimethylacrylamide and 2-acrylamido, 2-methylpropane sulfonic acid, guar gum, locust bean gum, karaya gum, carboxymethyiguar, hydroxyethylguar, hydroxypropylguar, carboxymethylhydroxyethylguar, carboxymethylhydroxy-propylguar, carboxymethylcellulose, carboxymethylhydroxyethylceilulose, carboxymethylcellulose, hydroxyethylcellulose, hydroxy-ethylcellulose, cellulose ethers. starches, alginates and carrageenans. Further examples of polymers and copolymers useful in the present invention include polysaccharides, galactomannan gums, glucomannan gums, cellulose derivatives, and cellulose, galactomannan or glucomannan gums that have been modified by reaction with hydrophilic constituents including hydroxyalkyl groups, carboxyalkyl groups and mixed hydroxyalkyl and carboxyalkyl groups to form ether derivatives. Other hyrdophilic constituent groups include cis-hydroxyl, hydroxyl, carboxyl, sulfate, sulfonate, amino and amide groups.

[0025] As noted, the solvatable polymeric material useful in the method of priming a concrete pump line described herein can be either a single polymer or copolymer;

or a mixture of polymers and copolymers. In the preferred embodiment, the solvatable polymeric material is selected from a group consisting of polyacrylamide, polyacrylate and mixtures thereof; preferably in an amount greater than about 80 percent by weight of the polymeric material and polyacrylate in an amount less than about 20 percent by weight of the polymeric material. The most preferred composition of the polymeric material comprises a mixture of polyacrylamide and and copolymer of polyacrylamide and polyacrylate wherein the weight ratio of polyacrylamide polymer to polyacrylamide/polyacrylate copolymer is about 9 to 1.

[0026] In addition to solvatable polymeric material, the solid particulate mixture of the present invention further comprises crystalline sand. Crystalline silica is the scientific name for a group of minerals composed of the compound silica (SiO_2), which is formed from silicon and oxygen atoms. Crystalline silica sand is composed of quartz, which is the most common form of silica found in nature. Crystalline silica sand is chemically inert and stable at temperatures encountered in concrete pump priming applications. Sand also refers to crystalline silica having particle sizes generally between that of .05 mm and 2.0 mm. Based on particle size distribution, sand is commonly divided into the following three general categories: (1) fine, being particle sizes between .05 and 0.2 mm; (2) medium, being particle sizes between 0.2 mm and .6 mm; and (3) coarse, being particle sizes between .6 mm and 2.0 mms. In the present invention it is contemplated that crystalline silica sand having any of these particle size categories, or mixtures thereof, would be useful as a component of the solid particulate mixture. In the preferred embodiment, crystalline silica sand has a particle size distribution typical of that commercially available as play sand.

[0027] The method of priming a concrete pump line of the present invention includes the steps of providing a solid particulate mixture comprised of solvatable polymeric material and crystalline sand, and mixing the solid particulate mixture with a sufficient quantity of water to form a flowable composition. The invention also provides pumping the flowable composition through a concrete pump line. It is contemplated that the quantity of water in the flowable composition being herein described as sufficient, shall be in the range of about .01 to about 1.0 pounds of mixture per gallon of water, preferably in the range of about .05 to about .25 pounds of mixture per gallon of water. In the preferred embodiment, the quantity of water in the flowable composition is about .1 pound of mixture per gallon of water. This is generally equivalent to mixing an amount of 0.5 lbs (8 oz.) of solid particulate mixture in five gallons of water.

[0028] The solid particulate mixture of the present invention may further comprise a tinting agent, preferably carbon black. The tinting agent may be present in the solid particulate mixture in an amount in the range of from about 0.1 to about 2.0 percent. With the use of tinting agent, which is the preferred embodiment of the present invention, the solid particulate mixture comprises crystalline sand in an amount of about 84 weight percent of particulate mixture, solvatable polymeric material in an amount of about 15 weight percent of particulate mixture, and tinting agent in an amount of about one weight percent of particulate mixture. The tinting agent provides a means of adjusting the color of the particulate mixture and flowable priming composition. The tinting agent also provides a means for visually indicating whether the priming composition has been added to a hopper.

[0029] The present invention further provides an improved method of making a flowable composition for use in priming a concrete pump line, the method comprising the step of mixing solid particulate material with water as described herein, wherein the mixture comprises solvatable polymeric material and crystalline silica sand.

[0030] The present invention also provides an improved solid particulate mixture that when mixed with a sufficient quantity of water forms a flowable composition useful in priming a concrete pump line, wherein the solid particulate mixture comprises solvatable polymeric material and crystalline silica sand as described herein.

[0031] It may be appreciated that the present invention provides an improved flowable composition for use in priming a concrete pump line. The improved flowable composition is comprised of a solid particulate mixture and water as described herein, wherein the mixture comprises solvatable polymeric material and crystalline silica sand.

[0032] It may be appreciated that the present invention provides a specialized lubricant agent for use in concrete pump priming having a balanced pH, unlike the highly alkaline lubricants for concrete pump priming known in the art. Further, the present invention provides a priming agent that mixes quickly to form a flowable priming composition that is easy to pump through dry concrete pump lines to lubricate the inner walls thereof.

[0033] Testing of the preferred embodiment indicates that after mixing for between four and nine minutes, and optimally less than five minutes, the flowable composition reaches and maintains its maximum lubricating potential. The short mix time exhibited by the preferred embodiment of the present invention reduces delays associated with priming a concrete pump line, and allows the priming agent to be prepared shortly before use.

[0034] Unlike specialized lubricating agents known in the prior art, the present invention does not utilize alkaline materials or other chemical modifiers that must be dissolved prior to use, thereby increasing the mix time. Mixing to form the flowable composition is further enhanced by a chemically inert dispersal agent for the polymeric material, namely, crystalline silica sand. The present invention exhibits reduced mix times, providing advantages over prior art lubricating agents for construction crews.

[0035] Tests indicate an additional advantage of the present invention is provided in a shorter time required for hydration of the particulate mixture upon being mixed with water. Unlike specialized lubricating agents known in the art, the composition does not continue to thicken or hydrate after an optimal five-minute duration after mixing. The short hydration time exhibited by the present invention reduces delays associated with priming a concrete pump line, and allows the priming agent to be prepared shortly before use. Also an important advantage of the present invention over lubricating agents known in the art, the short hydration time reduces the risk of using a priming fluid prior to full hydration, which could result in a failure to

adequately lubricate a concrete pump line. Instead of lubricating a pump line, a priming fluid that has not fully hydrated would draw water from concrete as it passes through a pump line. This drying effect on concrete reduces the effectiveness of the priming agent as a lubricant, and may lead to plugging of a concrete pump line. Because the present invention hydrates more quickly than specialized lubricants known in the prior art, the present invention will not draw water from or otherwise dry out concrete. On account of this characteristic of the present invention, the present invention is suitable for use as a priming agent on longer pump lines and with more difficult concrete mixes.

[0036] Another advantage of the present invention is that, through the use of chemically-inert sand as a dispersing agent, the flowable composition is a priming agent that has a balanced pH. The use of the present invention, unlike priming agents known in the prior art, avoids problems associated with the use of highly alkaline priming agents. In comparison to those priming agents, the present invention is non-alkaline and therefore safer to handle. The present invention has the further advantages of preventing contact between a highly alkaline material and concrete or form structures. This reduces the risk of damaging form structures such as rebar, and the risk of producing weak or unstable set concrete as a result of alkali-silica reactivity or alkali-aggregate reactivity.

[0037] It is to be understood that the form of the invention shown is a preferred embodiment thereof and that various changes and modifications may be made

therein without departing from the spirit of the invention or scope as defined in the following claims.

CLAIMS

What is claimed is:

1. A method of priming a concrete pump line, said method comprising the steps of:

providing a solid particulate mixture comprised of solvatable polymeric material and crystalline sand;

mixing said solid particulate mixture with a sufficient quantity of water to form a flowable composition; and

pumping said flowable composition through a concrete pump line.

2. A method of priming a concrete pump line as described in claim 1, wherein said mixture comprises solvatable polymeric material in an amount in the range of from about 2 percent to about 50 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 50 percent to about 98 percent by weight of said mixture.

3. A method of priming a concrete pump line as described in claim 2 wherein said polymeric material comprises solvatable polymeric material in an amount in the range of from about 10 percent to about 20 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 80 percent to about 90 percent by weight of said mixture.

4. A method of priming a concrete pump line as described in claim 3 wherein said polymeric material is selected from a group consisting of polyacrylamide, polyacrylate, copolymers of polyacrylamide and polyacrylate, and mixtures thereof.

5. A method of priming a concrete pump line as described in claim 4 wherein said polymeric material comprises polyacrylamide in an amount greater than about 80 percent by weight of said polymeric material and a copolymer of polyacrylate and polyacrylamide in an amount less than about 20 percent by weight of said polymeric material.

6. A method of priming a concrete pump line as described in claim 1 wherein said mixture further comprises a tinting agent.

7. A method of priming a concrete pump line as described in claim 6 wherein said tinting agent comprises carbon black.

8. A method of making a flowable composition for use in priming a concrete pump line, said method comprising the step of mixing solid particulate material with water, wherein said mixture comprises solvatable polymeric material and crystalline sand.

9. A method of making as described in claim 8 wherein said mixture comprises solvatable polymeric material in an amount in the range of from about 2 percent to about 50 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 50 percent to about 98 percent by weight of said mixture.

10. A method of making as described in claim 9 wherein said polymeric material comprises solvatable polymeric material in an amount in the range of from about 10 percent to about 20 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 80 percent to about 90 percent by weight of said mixture.

11. A method of making as described in claim 10 wherein said polymeric material is selected from a group consisting of polyacrylamide, polyacrylate, copolymers of polyacrylamide and polyacrylate, and mixtures thereof.

12. A method of making as described in claim 11 wherein said polymeric material comprises polyacrylamide in an amount greater than about 80 percent by weight of said polymeric material and copolymer of polyacrylate and polyacrylamide in an amount less than about 20 percent by weight of said polymeric material.

13. A method of making as described in claim 8 wherein said mixture further comprises a tinting agent.

14. A method of making as described in claim 9 wherein said tinting agent comprises carbon black.

15. A method of making as described in claim 8 wherein the ratio of mixture to water in said flowable composition is in the range of about .01 to about 1.0 pounds of mixture per gallon of water.

16. A method of making as described in claim 15 wherein the ratio of mixture to water in said flowable composition is in the range of about .05 to about .20 pounds of mixture per gallon of water.

17. A solid particulate mixture that when mixed with a sufficient quantity of water forms a flowable composition useful in priming a concrete pump line, wherein said solid particulate mixture comprises solvatable polymeric material and crystalline silica sand.

18. A particulate mixture as described in claim 17 wherein said mixture comprises solvatable polymeric material in an amount in the range of from about 2

percent to about 50 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 50 percent to about 98 percent by weight of said mixture.

19. A particulate mixture as described in claim 18 wherein said polymeric material comprises solvatable polymeric material in an amount in the range of from about 10 percent to about 20 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 80 percent to about 90 percent by weight of said mixture.

20. A particulate mixture as described in claim 19 wherein said polymeric material is selected from a group consisting of polyacrylamide, polyacrylate, copolymers of polyacrylamide and polyacrylate, and mixtures thereof.

21. A particulate mixture as described in claim 20 wherein said polymeric material comprises polyacrylamide in an amount greater than about 80 percent by weight of said polymeric material and a copolymer of polyacrylate and polyacrylamide in an amount less than about 20 percent by weight of said polymeric material.

22. A particulate mixture as described in claim 17 wherein said mixture further comprises a tinting agent.

23. A particulate mixture as described in claim 22 wherein said tinting agent comprises carbon black.

24. A flowable composition for use in priming a concrete pump line, said composition comprising a solid particulate mixture and water, wherein said mixture comprises solvatable polymeric material and crystalline silica sand.

25. A flowable composition as described in claim 24 wherein said mixture comprises solvatable polymeric material in an amount in the range of from about 2 percent to about 50 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 50 percent to about 98 percent by weight of said mixture.

26. A flowable composition as described in claim 25 wherein said polymeric material comprises solvatable polymeric material in an amount in the range of from about 10 percent to about 20 percent by weight of said mixture and crystalline silica sand in an amount in the range of from about 80 percent to about 90 percent by weight of said mixture.

27. A flowable composition as described in claim 26 wherein said polymeric material is selected from a group consisting of polyacrylamide, polyacrylate, copolymers of polyacrylamide and polyacrylate, and mixtures thereof.

28. A flowable composition as described in claim 27 wherein said polymeric material comprises polyacrylamide in an amount greater than about 80 percent by weight of said polymeric material and a copolymer of polyacrylate and polyacrylamide in an amount less than about 20 percent by weight of said polymeric material.

29. A flowable composition as described in claim 25 wherein said mixture further comprises a tinting agent.

30. A flowable composition as described in claim 29 wherein said tinting agent comprises carbon black.

31. A flowable composition as described in claim 25 wherein the ratio of mixture to water in said flowable composition is in the range of about .01 to about 1.0 pounds of mixture per gallon of water.

32. A flowable composition as described in claim 31 wherein the ratio of mixture to water in said flowable composition is in the range of about .05 to about .20 pounds of mixture per gallon of water.

ABSTRACT

An improved composition for and method of priming a concrete pump line is provided. The flowable composition comprises a solid particulate mixture and water, the particulate mixture being comprised of solvatable polymeric material preferably selected from a group consisting of polyacrylamide, polyacrylate and mixtures thereof; crystalline silica sand; and a tinting agent preferably of carbon black. The invention provides a non-alkaline flowable composition exhibiting improved coating and lubrication to the inner walls of a concrete line as it passes therethrough. The flowable composition mixes quickly with water, hydrates quickly upon being mixed with water, and provides a chemically-inert fluid composition for use in priming concrete pump lines that does not utilize cement or priming grout slurry.